



## ◆ Goals and Objectives

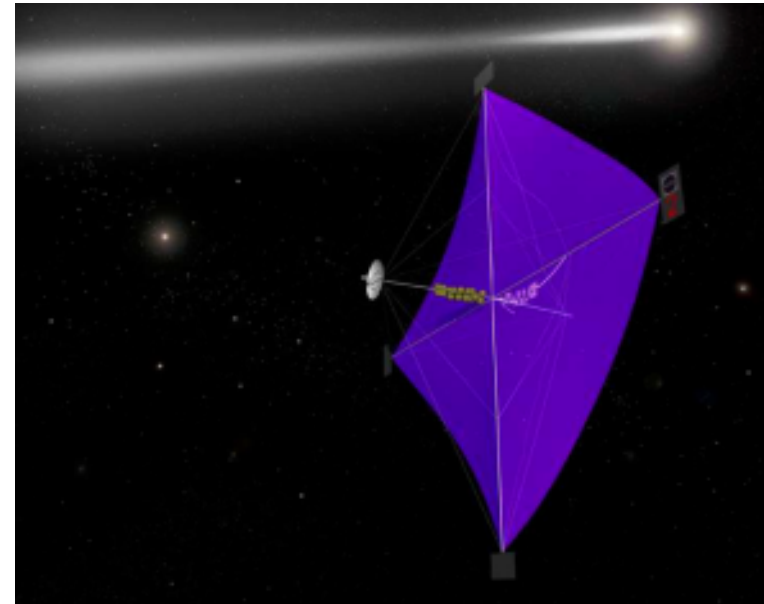
- Develop technologies to enable robust exploration of nearby interstellar space in support of proposed and planned interstellar precursor missions
  - Interstellar Probe Project
- Supports Goal 10

## ◆ Customers

- Aerospace Technology Enterprise
- Space Science Enterprise

## ◆ Partners

- Jet Propulsion Laboratory
  - Interstellar Probe Project
- Glenn Research Center
- NASA Headquarters
  - Gossamer Spacecraft Initiative
- Universities and Industry



## ◆ Key Technical Challenge

- Develop a propulsion system capable of reaching 250 astronomical units within 20 years of launch
  - 12 -15 AU/year required (~6 X Voyager)
- Two technologies can achieve project goals
  - Solar Sails (baseline)
  - Nuclear Electric Propulsion (option/backup)

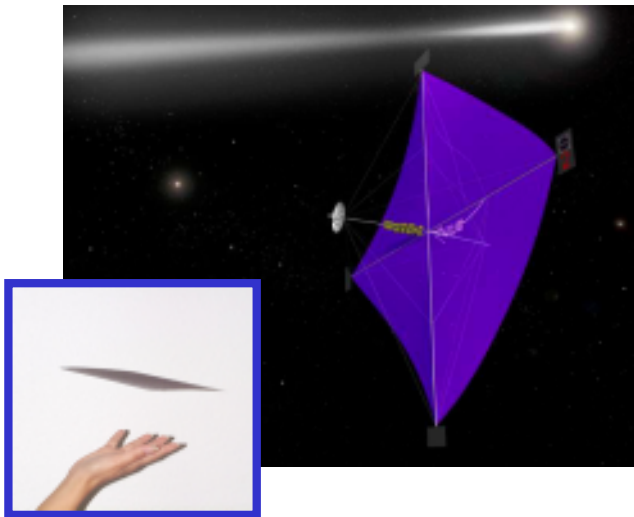
***Initiated in FY00***



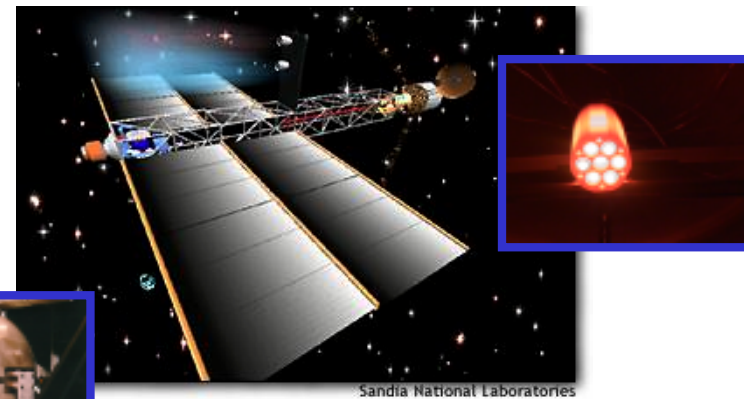
# Interstellar Precursor Technologies

— *Interstellar Precursor Project* —

— 2000 PMC —



**Solar Sails**



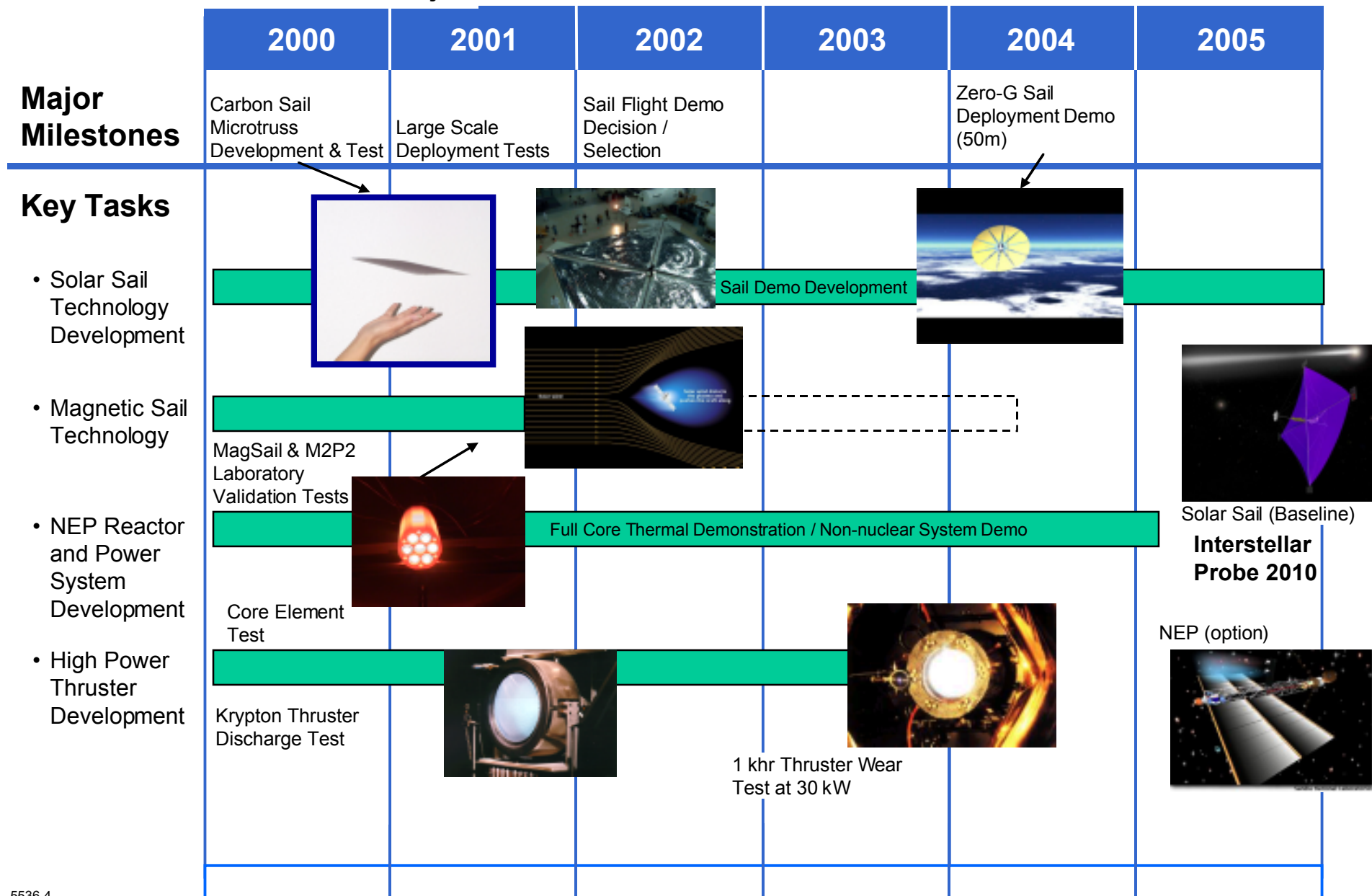
**Nuclear Electric Propulsion**



# Interstellar Precursor Project Roadmap

— Interstellar Precursor Project —

— 2000 PMC —



Solar Sail (Baseline)  
**Interstellar Probe 2010**

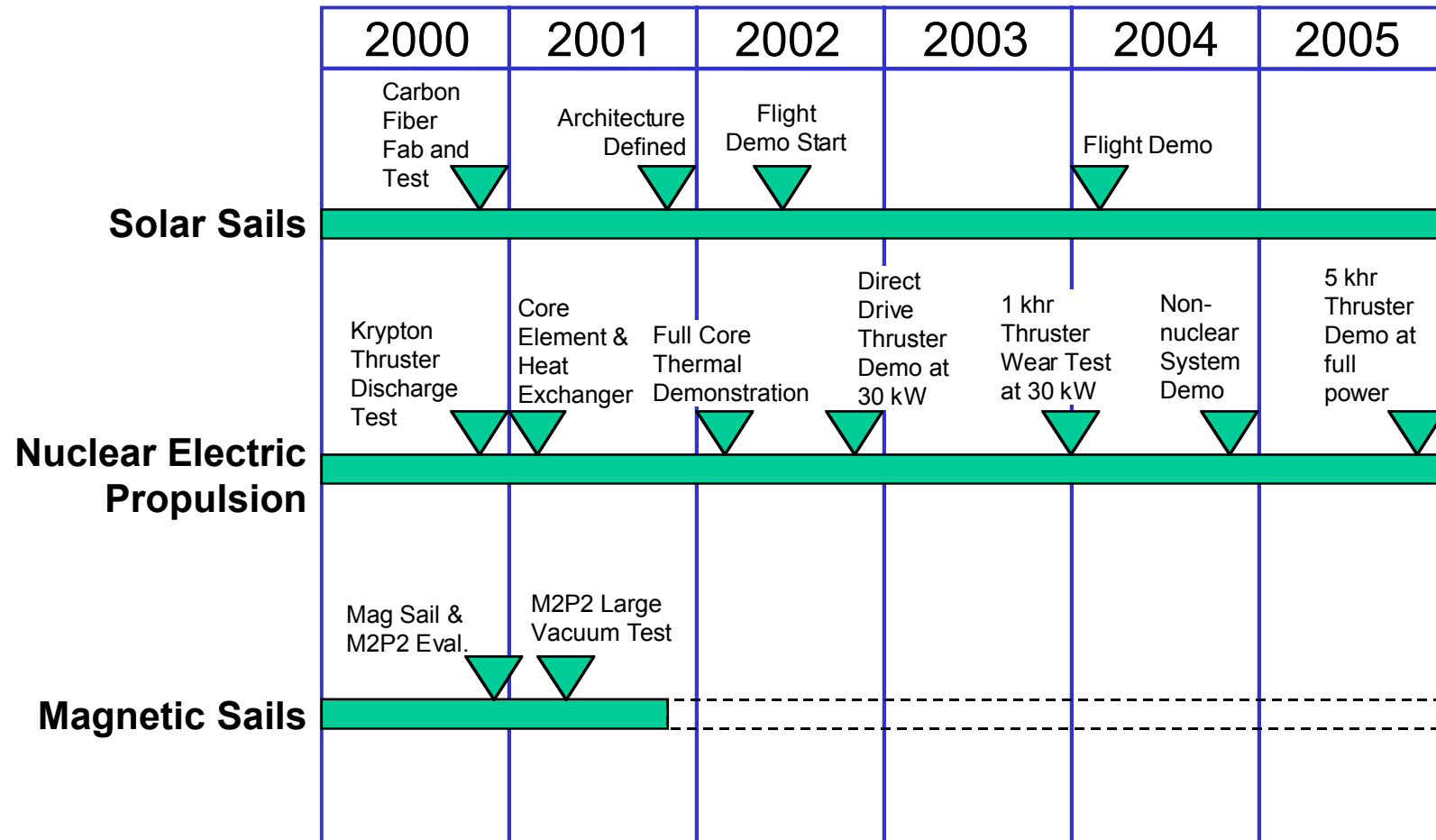
NEP (option)



# Interstellar Precursor Project Schedule and Major Milestones

— Interstellar Precursor Project —

2000 PMC —





# Interstellar Precursor Project Milestone Status

## ◆ Develop and test candidate solar sail microtruss fabrics

- **Planned Completion Date:** September / 2000
- **Output:** Sample carbon fiber microtruss and characterization
- **Outcome:** Low areal density fabric candidates for solar sail propulsion systems
- **Status:** 6 g/m<sup>2</sup> carbon coupons fabricated

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## ◆ Develop physics models of the Minimagnetospheric Plasma Propulsion System

- **Planned Completion Date:** September / 2000
- **Output:** Viability assessment of the propulsion concept and its applicability for propulsion
- **Outcome:** Decision for/against further development funding
- **Status:** Experiment plan drafted

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## ◆ Define a solar sail film architecture

- **Planned Completion Date:** September / 2001
- **Output:** Recommendations of architecture and attachment method(s)
- **Outcome:** Design drivers for sail fabrication and assembly
- **Status:** Not yet initiated

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